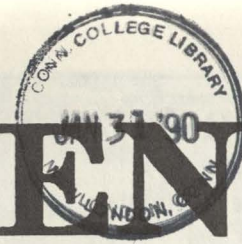


En 90
cb
v. 17, no. 3
Item 10B

CONNECTICUT

ENVIRONMENT



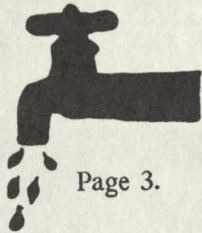
The Citizens' Bulletin of the Connecticut Department of Environmental Protection



Winter Picnics Are For The Birds November/1989

CONNECTICUT
ENVIRONMENT

November 1989
Volume 17 Number 3
\$7/year



Page 3.



Page 16.

Cover Chris Rowlands

Full-color poster Winter Picnics Are For The Birds available from
DEP's Wildlife Bureau. Details on page 22.

Features

- 3 **The Catastrophe that Didn't Happen** by Robert Paier
The test of a system is how it works when it has to.
- 7 **Governor Announces New Emergency Plan**
The state upgrades its capacity to respond to a major oil spill.
- 8 **The Human Way** by Ed Sarabia
A Native American talks about oil spills and responsibility.
- 10 **A Visit to Flanders Nature Center** by Kirsten Delegarde
Environmental education continues to be where it all starts.
- 12 **Folly Brook Follow-Up** by Alan Levere
How much natural recovery do we find a year later?

Departments

- 2 **Editor's Note**
- 9 **Parkview** by Thomas Robinson
- 14 **Natural Historian** by Patricia Konarski
- 16 **Nature Notes** by Penni Sharp
- 18 **Map of the Month** by Alan Levere
- 20 **Bulletin Board**
- 23 **Trailside Botanizer** by Gale W. Carter
- 23 **Night sky** by Francine Jackson
- 23 **Endnote**

Commissioner
Leslie Carothers
Director Info & Ed
William Delaney
Editor
Robert Paier
Contributing Editor
Alan Levere
Graphics
Rosemary Gutbrod
Composition
Caryn Furbush
Circulation
Olive Tyghter
Business Manager
Donna Fadoir

Phone
566-5524

DEP Connecticut Environment

Published 11 times a year by the Department of Environmental Protection. Yearly subscription, \$7.00; two years, \$13.00. Second class postage paid at Hartford, Connecticut. Please forward any address change immediately. Material may be reprinted without permission provided credit is given, unless otherwise noted. Address communications to Ed., **DEP Connecticut Environment**, Dept. of Environmental Protection, Rm. 112, State Office Bldg., Hartford, CT 06106.

"The Connecticut Department of Environmental Protection is an equal opportunity agency that provides service, facilities, and employment opportunities without regard to race, color, religion, age, sex, physical or mental disability, national origin, ancestry, marital status, or political beliefs."

Editor's Note

Sometimes one particular creature stands out as an individual. You become aware of it not as part of a great, amorphous, total population, but as a single being, with its own consciousness, its own feelings, its own unique struggle with life and death. The other day, I had a conversation with a neighbor who told me about a project of his involving the nuclear catastrophe at Chernobyl. "There are very strange plants there," he said. "And six-legged frogs."

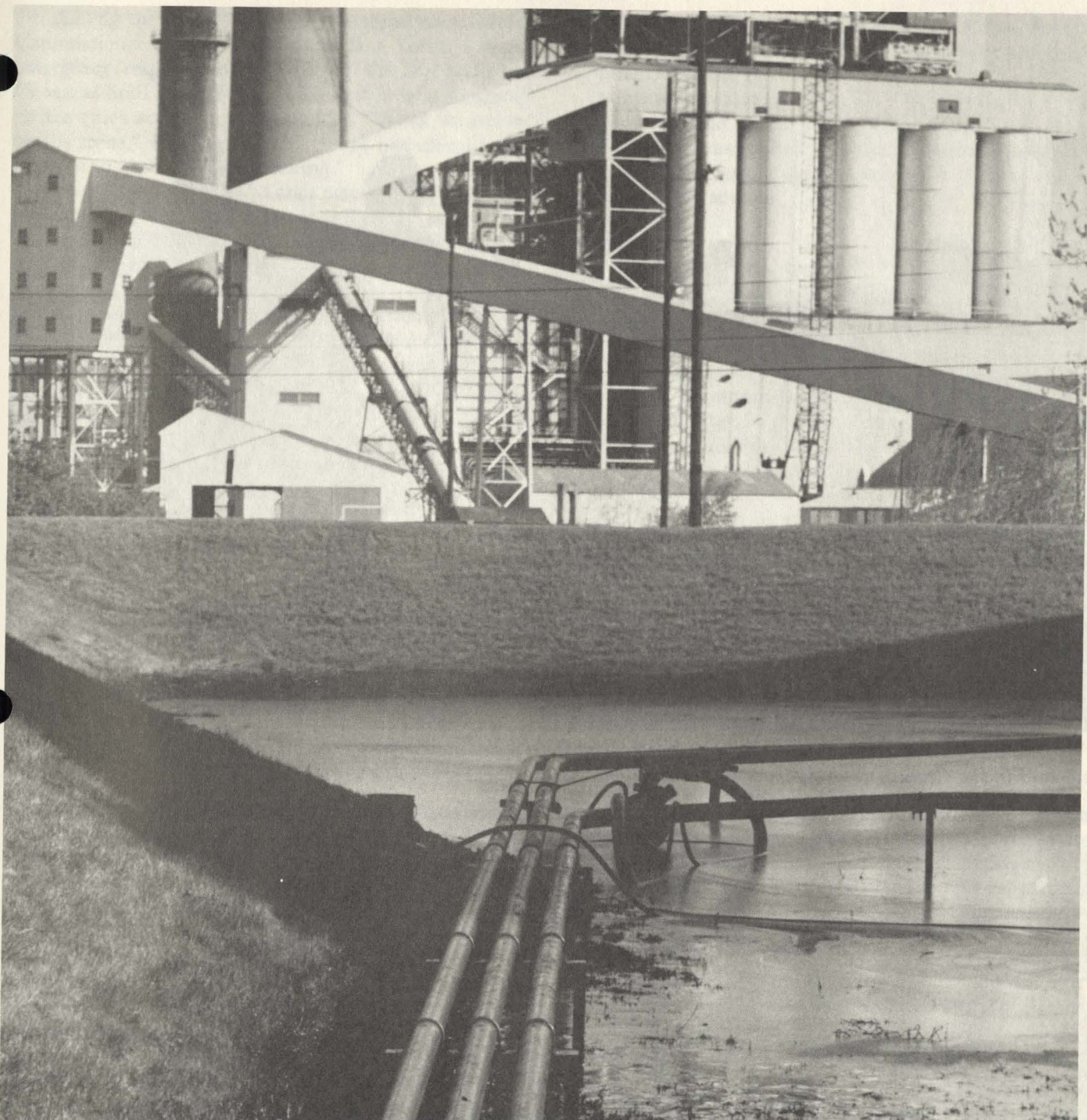
Now, the image of a six-legged frog, a mutation probably caused by the radiation from a nuclear melt-down, has great power. It tends to stick in the mind, to sink down into the depths of consciousness. I kept thinking about that frog. The frog began to take on the character of a Zen koan, an insistent, irrational, impossible puzzle, defying understanding yet demanding solution. What is that six-legged frog? What does it mean? What does it tell us about this world?

For a while I thought this six-legged frog might be a kind of monster, a Frankenstein-reflection of everything that is terrifying in this century, science run amok, life turning back on itself, the Enemy.

Then I thought that humanity, life itself, might be like this six-legged frog, born of chance, strictly a tourist in the vastness of the Universe.

To date, I haven't completely grasped the essence of this six-legged frog. In the meantime, it seems right and correct that this six-legged frog, this illegitimate child of nature, be granted as much right to exist as any four-legged frog or two-legged man. It seems right and correct that it be treated with honor and respect and dignity. And, for the time being at least, pending a definitive statement, it might not be too far off to treat this six-legged frog as an honored guest and fellow traveler.

R.P.



United Illuminating's Bridgeport Harbor Station was the scene this year of an oil spill that did happen and a catastrophe that didn't happen. (All photos courtesy of United Illuminating Co.)

The Catastrophe that Didn't Happen

by
Robert Paier

THE YEAR 1989 has been the year of the big oil spill. It has been the year that the Exxon Valdez and oil-soaked wildlife have been burned into our consciousness. The big oil spill is, right now, the focus of our envi-

ronmental fears, a threat from Prince William Sound to Rhode Island's coastal waters. The big oil spill is, right now, the symbol of the 20th century nightmare, causing all of us to pause, to reevaluate, to wonder what we're



The DEP's Ben Yorke (center) and Mark Bourgeois (right) get a situation report from Bernard Fielding, a contractor involved in the cleanup at Bridgeport Harbor Station.

doing to this planet. In this article, we will take a look at a catastrophe that could have happened but didn't. It didn't happen because of fast, intelligent, and responsible action on the part of everybody concerned. In this article we will see how the system worked.

THE BRIDGEPORT HARBOR STATION is an electric generating plant owned and operated by the United Illuminating Company. The fuel to power the huge boilers at this facility is contained in four holding tanks, each tank able to hold seven million gallons. These holding tanks are located within a 250-yard area. Surrounding that area is a 20-foot-high earthen dike. Beyond that dike is a narrow road. Beyond that road are the waters of Long Island Sound.

During the course of normal operations at the Bridgeport Harbor Station, oil is usually pumped into the holding tanks from a barge or tanker, and frequently transferred from one tank to another. This pumping and transfer of oil is carefully monitored by a complex, meticulous system of gauges, warning signals, bells, and alarms.

In the early morning of Tuesday, May 2, 1989, there was a heavy downpour. The rain was torrential, the beginning of a period of record rainfall which would last,

off and on, for the next six weeks. The night was unusually dark, what visibility there was was obstructed by the rain and fog, and there was a constant roar of heavy winds. In addition, on that night, a number of gauges had been temporarily disconnected because a new turbine was being installed at the plant.

At 5:45 a.m., with the aid of morning light, the night staff of the holding tank area discovered that the unthinkable had occurred. They saw that the holding area around the tanks was covered with a black, viscous, shiny layer of heavy number six fuel oil. And they saw that nothing separated that oil from the waters of Long Island Sound but an earthen dike and 15 yards of gravel road.

"What couldn't happen," as John Anderson, the DEP's deputy commissioner in charge of environmental quality, said, "did happen."

And when what couldn't happen did happen, right here in Connecticut, very recent memories of the Exxon Valdez sprang up in all their terrible power.

THE RESPONSE on the part of United Illuminating was immediate. "The spill was discovered at 5:45," said Robert Fort, manager of public relations at UI. "By 6:30, everyone concerned — the officers of UI, the DEP, contractors, the Coast Guard, and the press — had been informed."

Among the first to arrive at the scene were Deputy Commissioner John Anderson and Ben Yorke, a senior emergency response coordinator for the DEP's Oil and Chemical Spill Unit. Yorke stated that he was impressed by the quick action on the part of UI. "When we arrived on the scene," said Yorke, "UI already had cleanup contractors on the scene and working."

One of the things that Yorke noted had already been accomplished when he arrived at the scene was that, under the direction of Robert Klancko, UI's manager of environmental operations, Bridgeport Harbor personnel had already extended a long protective boom around the station, on the waters of the Sound. In the event any of the oil escaped from the station, it would then be contained within the area of the boom. It quickly became apparent, however, the oil was not going to escape directly into the Sound. The primary concern was resolved. The next concern was to actually clean up the oil, ensuring that it did not leach deeply into the ground. This immediate cleanup was conducted by Peter Acimovic, supervisor of operations, who was assigned by UI to coordinate cleanup efforts with the contractors and the DEP's spill response unit.

"We were able to get the booms out in the water so quickly because in fact they are always kept in readiness," explained Robert Fort. "The strategy is to have all emergencies covered. We hope these emergencies don't occur, but, as we know, the unforeseen does occur." So, having eliminated the problem of direct contamination of the waters of Long Island Sound, the next task that was approached was the possibility of the oil leaching into the ground.

"At the time," said Ben Yorke, "there was a cool rain.

The good thing about that was that the oil came out onto a soggy wet surface, thus minimizing the impact of the oil penetrating the ground. The bad thing was that the cool rain also increased the viscosity of the already thick number six oil, making it hard to manage."

Steam was applied to the oil to make it less viscous, and eight vacuum pumps and three hydraulic pumps were put in service.

THE SIZE OF THE SPILL was ultimately determined to be 800,000 gallons or, as John Anderson indicated, "one twelfth the size of the Valdez spill." It was estimated that the spill began sometime around midnight or the early morning hours of Tuesday, May 2. By May 5, three days later, 90 percent of the oil had been cleaned up and put into holding tanks. The soil cleanup would go on for some time, complicated by the unusually heavy rains during that time.

Of course, an event of this nature is cause for concern whenever it happens, but the fact that it occurred so soon after the Exxon Valdez catastrophe put even greater pressure on all parties concerned. "We were aware from the beginning of the close attention that this spill was given, both in the media and in Hartford," said Ben Yorke.

"United Illuminating has always been aware of our responsibility to the public," said Robert Fort. "The media was immediately told of the situation. The only way to handle this kind of situation is honestly and as straightforwardly as possible."

After the immediate crisis was over, the question which had to be asked was, how did this happen? How,



A total of 800,000 gallons of oil was spilled at the UI plant. John Anderson of the DEP noted that this was "one twelfth the size of the Valdez spill."

with all the complex safety systems, could 800,000 gallons of oil leak out before anybody saw it?

"The incident occurred while UI was in the process of putting the number three boiler back on line," said Yorke. "Because of this procedure, a number of alarm bells were going off, to be part of the general test cycle. These test alarms probably caused the alarm on the high level alarm system of the petroleum storage tank alarm to be overloaded and go unrecognized. Also, whenever a facility is taking on new product, someone is supposed to walk around checking. It is possible that this did not happen."

"The problem started sometime after midnight," said Robert Fort. "It occurred in the dark, in one of the more remote parts of the area, and in pouring rain. If human error is to occur, it will occur in situations like this."

Was anyone fired as a result of this incident. "UI as a company takes complete responsibility. No one was fired, but there was internal discipline and there were some changes of assignment."

Fort went on to indicate that there would be further upgrading of the security systems. "No matter how good we thought our systems were, the fact that a spill did occur proves that changes are necessary. There will be adjustments, and there will be more backup alarms."

It was also clear that all parties involved developed a mutual respect. "I was constantly impressed with the aggressive and conscientious attitude of UI," said Ben Yorke. "They showed a willingness to go the extra mile, to make extra effort to respond to the incident. They spared neither energy nor money in addressing the spill."

"Just because of the scope of their responsibilities," said Fort, "it is necessary that the high-level officers of United Illuminated take a global perspective. They care

about the environment. They care about doing the right thing."

Fort also had praise for the DEP, especially for Yorke. "Ben Yorke took right over as soon as he arrived on the scene. He was the decision-maker. He demonstrated a serious environmental concern as well as a knowledge of what he was doing. While listening to everyone's opinion, he maintained control and ultimate responsibility. He was a good boss."

AS OF THIS WRITING, the oil spill at UI's Bridgeport Harbor Station may be considered the catastrophe that didn't happen. The cleanup is now complete, although the area continues to be monitored on a weekly basis by the DEP.

"The true test of emergency plans is if you can contain a problem when it does occur," said John Anderson. "In this case, we were successful. According to the Coast Guard, there are about 150 spills every year in Long Island Sound. Not all of these are big spills, but some are. What this means is that we simply cannot become complacent. We need to constantly upgrade our emergency response plans."

Of course, this story is really bittersweet. We learn, time and again, that things go wrong. They went wrong here, and we can be sure they will go wrong again in the future. On the other hand, at the Bridgeport Harbor Station an emergency situation was recognized quickly, and was handled responsibly and conscientiously. The systems worked the way they were supposed to. And so, ultimately, this is a story about a catastrophe that didn't happen. ■



"The true test of a plan is if an emergency can be contained" said John Anderson. In this case, the system worked.

Governor Announces New Emergency Measures

GOVERNOR WILLIAM O'NEILL has announced a multi-step plan to increase Connecticut's capacity to respond to a major oil spill along state coastlines and waterways.

Governor O'Neill, speaking from a dock adjacent to United Illuminating Company's power plant on New Haven Harbor, also called on Connecticut's Congressional delegation to work with his administration to strengthen the national response to major spills.

The governor's proposal, unveiled on August 17, would mandate booming of all vessels unloading oil at marine operating terminals in Connecticut. It also calls for the purchase of an oil skimming vessel and 36-foot work boat to carry 1,200 feet of containment boom to be ready for transport to any spill site.

"These proposals, I believe, will make Connecticut ready and able to respond in case of a severe emergency," Governor O'Neill said. "The cost for this program will be less than one million dollars, and it will be paid for by increasing licensing fees of our operating terminals, and from proceeds from our emergency spill fund."

Governor O'Neill said the state has had an emergency oil spill response plan in place since the early 1970s. "However, we have seen what can happen in the event of a spill. I believe these moves are prudent and necessary to upgrade our plan."

AMONG THE RECOMMENDATIONS made by Governor O'Neill are:

- Purchasing the two boats; buying another 10,000 feet of containment boom for distribution to coastal towns; and redeploying presently



DEP Deputy Commissioner John Anderson, Commissioner Leslie Carothers, and Governor William O'Neill at a press conference in New Haven. New emergency steps will help the state to better respond to oil spills.

owned equipment to a reconstructed DEP facility in Old Lyme or another centrally located position. The state currently owns 8,500 feet of boom.

- Developing regulations to mandate safety improvements to the 62 licensed marine terminals, to include high-level alarms, impervious dike enclosures, oil spill containment facilities at loading docks, and regular tank maintenance procedures.

- Adding three marine inspection staff members at the DEP to increase inspections of marine facilities from once to several times annually.

- Hiring an emergency response coordinator to work with private and public oil spill cooperatives, local governments, and volunteer fire departments to prepare individual communities to respond to local emergencies.

- Developing an up-to-date state contingency plan integrating both federal and local response plans with those of the DEP.

In addition, Governor O'Neill said he will be writing the state's Congressional delegation to enlist support to increase the Coast Guard's ability to respond to a problem in the state.

AMONG THE PROPOSALS the Connecticut delegation should seek, Governor O'Neill said, is the reactivation of the U.S. Coast Guard Atlantic Strike Team which was consolidated into the Gulf Coast Strike Team several years ago.

O'Neill said he would like to see the Coast Guard equip all major ports with 2,500 feet of boom, review the piloting regulations for coastal and navigable waterways to ensure they are adequate, and increase the Coast Guard marine terminal and tank inspection program.

Governor O'Neill said Congress might also consider requiring all vessels shipping oil to have containment booms on board in an amount sufficient to encircle the vessel in case of spill. It can also increase federal liability requirements for tank vessels to ensure adequate financial coverage in the event of open water spills. He said double hull construction for all new transport vessels operating in, or coming into, the United States should be considered.

"These proposals have been presented to me by the DEP, following a review I requested after the tanker *Valdez* spilled 10 million gallons of oil off the coast of Alaska last spring. I believe this report is comprehensive and reasonable in price, and when implemented, will make this state better able to respond to oil spills," Governor O'Neill said.

"Connecticut has invested and will continue to invest large amounts of money protecting our natural resources. I believe the expense of this program is modest when you consider the damage -- both ecologically and economically -- a single spill might have on our coast line."

The Human Way

by
Ed Sarabia

Oil spill. These words conjure up visions of dead birds, dead fish, dead environment. The oil spill in my home state of Alaska concerns and frightens me, not only as a private citizen of Connecticut, but as an Alaskan Indian.

I am a member of the Tlingit tribe, which originates from Southeast Alaska. We have made our living from the sea. Our tribal name reflects our culture because Tlingit means "tides people." One of our main sources of food and income is commercial fishing. I was raised on my father's boat as a commercial fisherman. I remember the rain, the sun, the moon, salt water, the smell of diesel exhaust from the boat's motor, seine nets, fish jumping, the wind, the birds, and -- close to the shore -- deer swimming. The sea gives us, the Tlingits, life and death. Our life centers around the sea, Mother Nature.

My elders, the older members of my clan and tribe, spoke of life and death, of the fragility of the land and sea, of the animals and ourselves, of all the environment. They referred to ourselves, us human beings, as Mother Nature -- we are not separate from the land, sea, air, animals, flowers, insects, and trees. We all share this common environment known as Earth. We are responsible for ourselves and for the other creatures. We are responsible for our environment. We humans are more responsible because we can -- and do -- damage the Earth more than any other creature.

Oil spill. My mind understands, but my heart does not. My eyes see it, but my soul rejects it. The oil spill is not near my village area, yet it is part of an area where some of us Tlingits do commercial fishing. The spill also is in an area where fish must pass to get to their spawning ground. Halibut fish are "bottom fish," meaning they live near or at the ocean bottom. The oil has thickened into balls and sunk to the bottom where the halibut feed. The price of halibut at the fish processing plant has dropped. That means our income drops, our livelihood suffers. The price of fuel goes up at the same time our income suffers. Yet, the real suffering is in us all. Let us not say of this oil spill, "They did it, he did it, she did it, others did it." Let us say, "We did it." We did it to ourselves. Because we are the most responsible, we did it. We suffer because Mother Nature suffers. Mother Earth suffers, we suffer. I have read that the sea will totally recover -- I hope so.

This is the lesson my elders gave me: We are responsible to each other. We are responsible to our planet and all that is on it. This is the lesson I pass on to my children. This is the lesson my children will pass on to their children.

People will say this is the Indian way. The truth is, this is the human way.

All my relations.

Bluff Point State Park

by
Thomas A. Robinson
Environmental Intern

Nestled along the Connecticut coast, Bluff Point Coastal Reserve is a refreshing oasis in the highly developed Connecticut shore. Although during the past 300 years Bluff Point has been both farm and vacation resort, the 816-acre peninsula has now returned to its original state. Bluff Point offers hikes through wooded highlands, bicycling and skiing, fishing in the tidal marshes, and scenic picnic clearings overlooking Fisher's Island and Long Island Sound. At Bluff Point, the scientist, nature buff, or casual observer will find a unique, undisturbed environment for study, reflection, and relaxation.

Due to abundant natural resources, fertile soil, and convenient location, generations of settlers were drawn to the area bordering the Poquonnock River, known today as Bluff Point Coastal Reserve, or simply Poquonnock. As early as 1661, John Winthrop began converting the relatively untouched wilderness into a farm. Passing through the hands of such noteworthies as Edward Yoe-mans, John Ackley, and John Avery, this region remained a thriving farm, as well as a community of summer cottages and huts.

The designation "reserve" has been viewed by some critics as "anti-human" and unjustly limiting of the ties of human activity -- no hunting or motor vehicles are allowed, nor do public facilities exist. Nevertheless, Bluff Point Coastal Reserve continues to be of interest to humans. What the park may lack in public accommodations and recreational facilities, it more than makes up for in the richness of wildlife and vegetation, its history, and its rugged beauty.

And perhaps the best way to enjoy the park is by taking a leisurely hike through its interior. Beginning with

the dense vegetation of the woodlands (almost impenetrable where tangles of bull briar vines have taken control), the shaded groves of oaks and maples are as thick as many inland forests. As hikers emerge from forested acreage into a hazy meadow of yellowing grasses and wild flowers, they will follow the winding path toward Mumford Cove and tidal marsh. And there, if they are lucky, they may catch a glimpse of one of the park's 70 deer.

Of particular interest throughout the park, but especially at Mumford Cove, is the extraordinary population of birds. For the birdwatcher, Bluff Point offers a host of treasures. Overhead, squadrons of swifts, searching for their next perch, momentarily darken the sky. Kingfishers, green herons, and cormorants skim the water surface in search of fish.

South of Mumford Cove, the wetlands open into the ocean front. The rocky ledges, or bluffs, face the sea and provide an excellent vantage point for viewing Long Island Sound. In contrast, however, to the rugged bluff, just minutes away is a stretch of sand dunes known as Bushy Point. Held together by grasses and ivies, the shifting dunes serve as a reminder of the fragility of the entire ecosystem.

Back along the trail to the parking lot (for those who forgot to pack a lunch), edible fruits, berries and grape vines abound. And, in fact, there are valuable gifts from past times. Bluff Point's meadows contain several or-

chards of apple trees originally from the old Gardiner farm. Most unforgettable, however, is the beach plum. Found along the edges of the sand dunes, these tart, orange, cherry tomato-sized fruit are a favorite for jellies and preserves.

While hikers, photographers, and birdwatchers are the most frequent guests here, Bluff Point Coastal Reserve is a valuable "living" laboratory for students. School groups are welcome to explore and experiment in the undisturbed setting of a Coastal Reserve. Groups such as the University of Connecticut's Project Oceanology at Avery Point conducts research projects here throughout the year.

Attracting over 100,000 visitors annually, the park remains open year round. For the casual walker, fisherman, scientist, cross country skier, naturalist, or tired civilian, Bluff Point is quite accessible to the public and certainly worth a day trip or outing. Directions to Bluff Point are: Take the Route 117 exit from I-95, turn right onto Route 1, then left onto Depot Road, and follow under the Amtrak overpass up to the gravel parking lot. There is no charge.

For more information on Bluff Point, contact: Calvin Innes, Park Manager, Bluff Point Coastal Reserve, Groton, CT 06340, (203) 445-1729.

For a more detailed history of the region, see Carol Kimball's *The Poquonnock Bridge Story*, published by the Groton Public Library.



Bluff Point attracted settlers since 1661. It has now returned to a natural state. (Photo by Tom Robinson)

A Visit to Flanders Nature Center

by
Kirsten Delegarde
Environmental Intern

UNLIKE THE ADULTS accompanying them, the Waterbury fourth graders were eager to feel the yellow jello-like substance that Susan Piel was passing around. The children crowded around Piel, straining forward to examine the green circles floating in the rubbery gel. Piel explained that the orbs were frog eggs that the developing tadpoles had already abandoned for the pond.

"This is the first time many of the kids have had a chance to feel frog eggs," said Piel, director of education at Flanders Nature Center.

Frog eggs were not the only first for many of the 46 ten-year-olds visiting Flanders on that early day in June. The Nature Center, located in the rolling green hills outside of Woodbury, has pioneered a program called "One Earth to Share — Handle with Care," which involves an in-school presentation and a visit to Flanders. The goal of the program is to raise environmental awareness in young people. This spring, 13 busloads of children have come out to Flanders.

AT THE FLANDERS BOG POND, the children struggled to keep their balance on the muddy banks in the steady rain. Using nets to scrape the bottom of the pond, they dumped their catches into pans full of water in order to examine them more closely.

"I don't see anything," said one of the children from Lois Rugerio's class at Kingsbury Elementary School in Waterbury.

When Piel took a look, she found nymph mayflies, water scorpions, and beetles, showing the children there is much more to most ponds than just fish. She explained that everything in the pond is a thread in the web of life. Later, she showed the children salamanders and frogs she



At Flanders Nature Center, students "go through the glass that separates them from the natural world."

had caught earlier in the day.

Slipping and sliding in the mud, the group walked to the trail house on the Flanders Botany Trail, where Piel pointed out calla lilies, skunk cabbage, ferns, and wildflowers.

From the trail house, it was a short bus ride to the Flanders sheep barn, which is maintained by a farming tenant. Many of the children walked into the barn covering their noses with hands or shirts. But they forgot about the odor as soon as they felt the soft tickle of a sheep eating out of their hands, or learned from Volunteer Norma Rogers how to use two steel brushes to transform prickly raw wool into the soft stuff of sweaters. They buzzed with excitement as they compared the sizes of the rams and the ewes and chased the barn cats, who loved all the attention.

Rugerio said few of the children in her class had been there before, even though the reserve is only 15 to 20 miles from Waterbury.

Maggie Genevali, a reading consultant who joined a fourth grade class for their visit to Flanders, said, "Many of these children don't get exposure to the natural envi-

ronment at all. I thought it was excellent. The children certainly did seem to enjoy it."

She said the children particularly enjoyed fishing at the pond. "They see nothing in the water, then all of a sudden, they catch something. It was quite an eye-opener."

"I notice already in the science curriculum, the children seem more interested when we come to the parts about the plants and the animals," said Rugierio.

Generali added, "The children seem to treat animals more gently. They realize more that you have to be careful what you step on. This will have a long term impact."

Before the Waterbury fourth graders came out to Flanders, Piel visited their schools to present an auditorium program on "Inter-connectedness and Ecosystems," according to Flanders Executive Director Patricia Christgau.

Christgau said that when the children come to Flanders they are "going through the glass that separates us from the natural world. They realize that we are all a part of it."

WITH A SLIDE SHOW of littered and treeless streets next to those of clean and green streets, and introducing the children to environmental career possibilities, Christgau said the program shows children an alternative way of life. In addition, by instructing them in ways to help the environment, like asking for paper bags rather than plastic from the supermarket, the children gain a sense of awareness of the environment.

Ingrid Manning, the administrator of the Waterbury Foundation, said "We were very pleased with the extensive program Flanders Nature Center was able to put together. It provides greater exposure to other environments and other experiences."

This two-part program supplements the other in-school educational programs that Flanders already had in place. According to Christgau, Flanders has already presented such programs as "Flower Power," "All About Birds and Sheep," "We Care About Eagles," "Water — We Can't Live Without It," and "The Whole of the Tree," in 10 surrounding towns.

THERE ARE OPPORTUNITIES for all ages to learn about the natural world at the Van Vleck Farm Sanctuary, the 200-acre heart of the Nature Center. The Botany Trail, the Nut Tree Arbor, the Pumpkin Patch, and the Sheep Barn are all used for different programs, such as fern and wildflower walks, fall harvest festivals, bird walks, and classes about sheep. The wide diversity in the landscape of the Van Vleck Farm Sanctuary, with its marshes, woodlands, streams, ponds, and hay fields, is helpful for on-site educational programs.

Those interested can learn about maple syrup making in February, and how it is tapped and collected in March. Natural history classes for adults are in April and May. Summer nature classes for ages 4-12 start at the end of

June and continue through August. In October, there are bog walks for the public to enjoy. Periodically, there are lectures on reptiles and amphibians. In addition, the Center sells honey, hay, and maple syrup.

When Flanders Nature Center was founded by Natalie Van Vleck in 1963, it was primarily a land trust.

"Natalie Van Vleck understood it was important to have open space to give the plants a place to breathe and where their habitat is undisturbed," said Christgau.

Flanders continues to exist today "because of a large number of caring, dedicated people who are interested in preserving open space and the rural quality of their community. It also exists because of the growing and urgent awareness of those same people of the environmental issues that are facing us all," said Christgau.

Now, with a full-time staff of four — a director of education, a land manager, an executive director, and an administrative assistant — and well over 100 volunteers, the Center works as a land management, educational, and information resource organization, according to Christgau.

Christgau said that Flanders tries to "expand our awareness of global concerns and serve as a resource in the community for these concerns. However, we must not overlook the immediate concerns of the community. We must take care of our own immediate area and set an example. Think globally, act locally."

Flanders is doing its best to prepare the younger generation to carry on this local action by giving them a basic education about their natural environment. Christgau said, "as we become knowledgeable and interested in the world around us, we realize that we are not isolated units, dependent on other people only for our survival and fulfillment. Students begin to sense that they are part of a vast system of interdependent live matter — a profound concept that, once learned, is never forgotten."

For further information, please write to: Flanders Nature Center, P.O. Box 702, Woodbury, CT 06798; or phone (203) 263-3711. ■



The goal of environmental education is to learn that we all participate in a vast, interconnected system.



A spring 1989 overview of the clear-cut area of the Folly Brook Natural Area looking south from the flood protection dike. The large area of open water in the foreground is probably a borrow pit for material used in the construction of the dike. Note the number of stumps that have sprouted new growth. In contrast, the stumps farthest from the dike have largely died from an unknown cause. (Photos by Ken Metzler)

Folly Brook Follow-up

by

Alan Levere

Senior Environmental Analyst

D ECEMBER MARKS TWO YEARS since the initial Department of Transportation (DOT) clear-cutting of the trees at the Folly Brook natural area site.

Since that time, the river has flooded and the regrowth has begun. Some of the silver maples have sent stump sprouts skyward in the hope of a new start, an advisory group has been formed to guide future decision-making, and new research work has begun. Much headway has been made. But let's recap to see what we are rebounding from.

I T WAS 33 YEARS AGO that Hartford designated 88 acres of the Folly Brook area as a permanent natural area site. Its secluded nature and sheer existence as Con-

necticut River forested flood plain habitat makes it ideal for study. Brainard Airport is north of the natural area and is protected on the east and the south by a dike.

For the last 18 years, the natural area has been the site of combined research and study by The University of Connecticut and the Natural Resources Center at the DEP. A note of further recognition came in 1976 when the DEP identified the area as one of 11 types of critical habitat in the state. It was also home to some then-designated "species of special concern."

For navigational aid purposes, the Federal Aviation Administration's (FAA) manager of airport planning asked the DOT to "top" the trees in the second half of 1987. Aircraft frequently approach from the south, over the Folly Brook natural area. The response was a com-

mencement of clear-cutting which began in December of 1987. It stopped three months later in March of 1988.

An area of 24 acres was deforested and the acknowledged, critical habitat effectively ceased to exist. This was described in the June 1988 *Citizens' Bulletin*.

IN THE YEAR AND A HALF since the DOT clear-cutting, a lot of regrowth has occurred. (Please see photo above.) I visited there three or four times, always when either flood or deep mud conditions prevailed. From the tip of the dike I had expected to look down on the bare sediment left by the spring flooding and see the acres of clear-cut stumps. But I hadn't thought the process through completely.

From the dike this clear-cut area doesn't really look too bad. Though there are no trees, it is thick with growth and richly green. But a walk down the dike and onto the flood plain this summer revealed a more complete story.

The greater part of the area is dominated by annual weeds frequently standing five feet tall. Beggar's tick, cockle burr, and smartweed have a stronghold on the land. Purple loosestrife is invading. It is possible that these weeds are nature's quick fix for stabilizing the recently disturbed and highly erodible floodplain soils.

Being out there on the floodplain gave me kind of an odd feeling. It is generally quiet. The Connecticut River rolls silently by. Occasionally there is an interruption from the roar of an incoming plane or helicopter. It is hard to decide whether there is a feeling of death amid so many lifeless stumps.

Some of the maple stumps have given rise to stump sprouts, frequently many to a stump, in their ongoing pursuit of life. Of these, many have done well and, if left alone, should grow successfully to maturity.

This past spring, the DOT was to have trimmed the stumps with sprouts, leaving the largest, most healthy sprouts to thrive. Unfortunately, the largest sprout was not always the one that was left. In addition, it is now clear that many of the stumps are dead.

The bulk of all new maple growth will have to come from seedlings. But the seedlings will have to compete for sunlight with the weed cover. Since the weeds are able to grow more quickly, it will take decades for the seedlings to grow to saplings because of that competition.

REGARDLESS OF HOW THEY GROW, the maples will have to follow a restricted growth plan. For regulating purposes, the area that the DOT clear-cut will be divided into three zones as you move south from the dike.

The first zone will have unrestricted tree maintenance by the City of Hartford. The main issue will be the integrity of the dike. Over time, large root systems can do real damage to a dike.

The middle zone will be subject to intermediate activity by consensus of the advisory group made up of the City of Hartford, the DEP, The Nature Conservancy, and

the DOT. Trees will be allowed to regrow, but could be maintained for height control.

The third zone will be allowed to revegetate untouched. Here researchers have already begun to record both the diversity of ground cover and rate of tree growth. Oddly, this is the area where most of the stumps have died, so new trees will grow from seedlings, not stump sprouts. In addition, erosion and deposition will be plotted against a control site further south along the river. It has yet to be determined if any new patterns of erosion or ponding of flood water will result from the annual freshets.

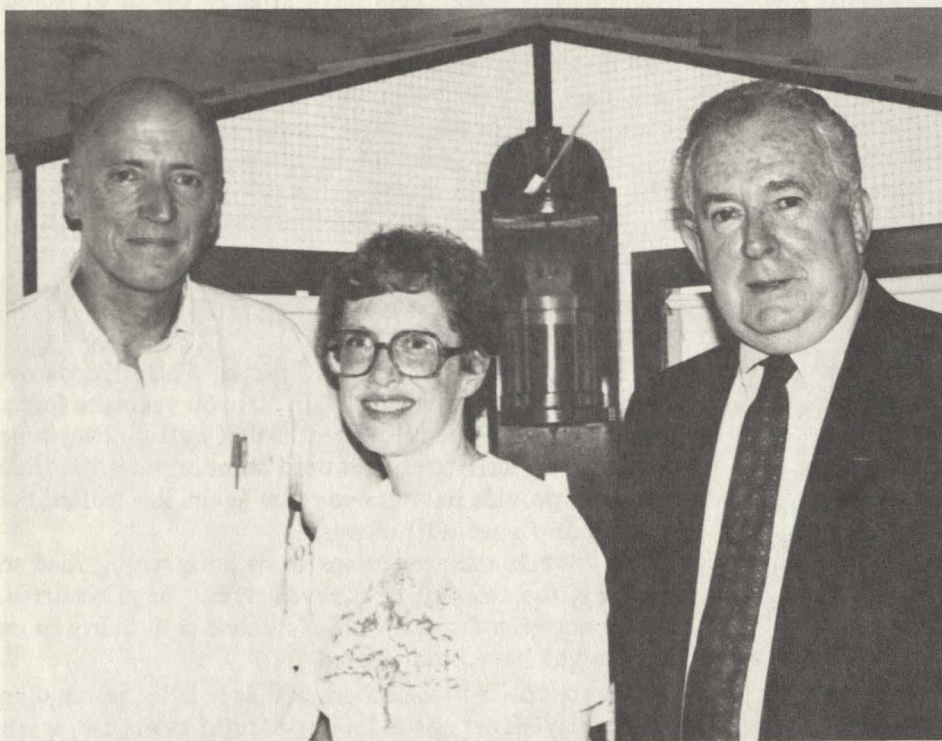
IT WILL BE A LONG TIME before Folly Brook assumes the look it once had. In 50 to 60 years the forest will again dominate the area. It is difficult to determine how long it will be before dead standing and deadfall trees will provide habitat and cover again. Regardless, the flood plain forest will recover.

But while the area seems to be on a strong road to recovery, the clear-cutting never should have occurred. Had it not been for one citizen's phone call, many more acres might have been cleared.

Maybe the big lesson here is that it takes an ongoing community effort not to let our natural assets disappear. I guess you can make the case that not every feature that is lost to "improvement" is lost forever, but we are really very lucky this time that this feature can regrow. ■



Two years of stump sprout growth (approximately 10 feet) from a cut silver maple. Note the three strong leaders left by thinning the previous fall. This growth rate will eventually slow to a more stable rate once the stored resources from the large root mass have been depleted.



In the new DEP Building, opened at the Hebron Fair, Museum Chairman Alexander Gardner, DEP Commissioner Leslie Carothers, and Governor William A. O'Neill toured the Connecticut Ground Water Exhibit. (Photos: Carol Davidge)

For Ground Water, Red Means Caution

by
Patricia Konarski
Writing Intern
Connecticut State Museum
of Natural History and
UConn English Department

EVERY CONNECTICUT RESIDENT should be concerned about ground water quality, according to Jim Murphy, Principal Environmental Analyst from the DEP's Water Compliance Unit. "One third of Connecticut's population gets their drinking water from the ground. That's approximately 1,000,000 of us," he says.

"At this moment, over 1,500 wells have been contaminated statewide. Approximately 200,000 people are affected, and I wouldn't be surprised if

the number were much higher," said Murphy. Any chemical dumped on the ground, used in a garden, or poured down a sink or toilet may end up affecting the water quality. "If you wouldn't drink a chemical," cautions Murphy, "be careful how you dispose of it."

GROUND WATER, quite simply, is the water found under the ground at the level of saturation. "Basically, it is water, precipitation, sunk down into

the ground, moving down and laterally, to eventually arrive at the surface," explains Murphy. Because water constantly moves, whatever chemical seeps into the ground at one point may end up in someone's drinking water some hundreds of feet away. "There are 60,000 man-made chemicals in the environment, and we know about the health effects of only about 30 to 40 of them," said Murphy.

Cleaning up contaminated water can be done, but it is costly; often, the contaminants cannot be completely eradicated, just reduced in concentration to a safer level. One may go through life drinking water that contains one part per billion trichloroethane. The long-term health effects of consuming water trace units of certain chemicals is unknown at this time. Higher levels of trichloroethane and some other chemicals are known to cause cancer and birth defects.

"The point to stress is prevention," says Murphy. Prevention begins with educating the public about the facts on water contamination. "We try to engender enlightened self-interest," says Murphy.

AS PART OF THIS EDUCATION, The Connecticut State Museum of Natural History and the DEP have collaborated in the creation of a traveling exhibit about ground water. It was designed by Collin Harty, exhibits planner for the Museum. Rather than being a permanent resident of the Museum, this exhibit will travel to local town halls, community nature centers, and regional museums. The exhibit stresses how community development and personal actions affect the quality of ground water.

"A mobile traveling exhibit is good for dealing with environmental issues because it casts problems in the context of the community where problems are real, and not abstract," explains Harty. The reality of well contamination, as well as the solutions and preventive measures, rests with the towns and individuals of Connecticut.

Harty hopes the exhibit will "help people to think about their actions and how they affect ground water; to spur them to take actions about the problem, or at least make people more curious about it."

THIS FIRST THING the visitor will notice about the exhibit is the bright red sink that sits in the middle of it. Harty explained that red is the internationally recognized color of caution, thus emphasizing the need to be cautious about what you pour down your bathroom sink.

Two perspectives are illustrated by the exhibit: individual and community. The solutions to ground water contamination lie in both arenas. At the end of the exhibit the visitor will find a brochure with ideas and actions which he or she can take to help prevent ground water contamination.

The exhibit was funded, in part, by grants from DEP, the Alexander Host Foundation of Old Greenwich, and the Center for Environmental Health at The University of Connecticut.

TO PREVENT GROUND WATER PROBLEMS:

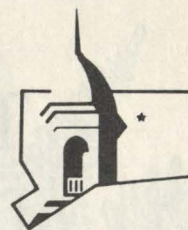
- Have underground fuel tanks tested for leaks regularly. Buried, metal unprotected tanks have an average life span of 15 years.
- Be aware of the toxicity level of items you pour down the drain. Common toxic household items include: drain cleaners, paints, solvents and thinners, motor oil, gasoline and kerosene, insecticides, and household cleaners. Use these chemicals up completely or give the excess away. If that's not practical, store them safely until you can dispose of them at a household hazardous waste collection day.
- Be careful not to pour toxic chemicals on the ground to get rid of them. They seep into the soil and may eventually reach moving ground water.
- Get involved. Start in your own town. Talk to town officials about the needs and programs in town. Join a board or commission. Organize a haz-

ardous waste collection day. Help to support actions to protect ground water supplies.

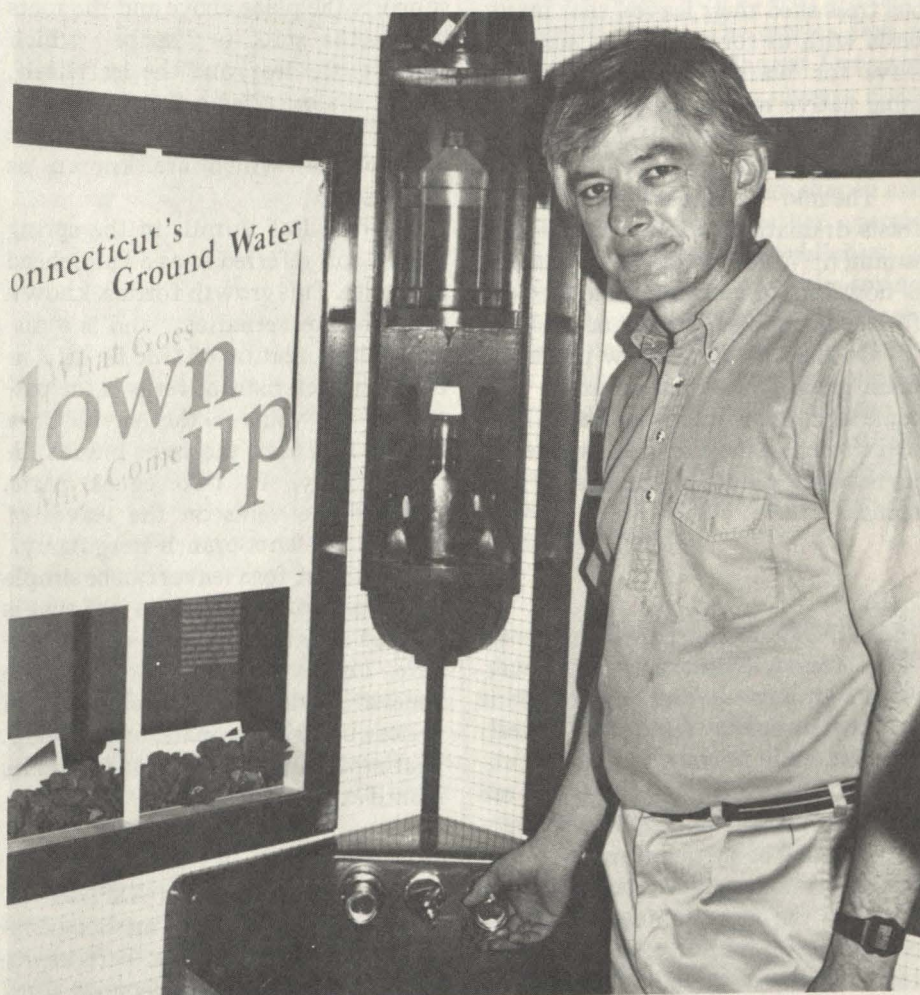
For information about towns and hazardous waste collection days, contact Ms. Leslie Lewis at the Connecticut Department of Environmental Protection, Information and Education Office, State Office Building, 165 Capitol Avenue, Hartford, 06106, phone: (203) 566-3489.

To learn more about working in your town, contact Jim Murphy or Bob Hust, DEP, Water Compliance Unit, 122 Washington St., Hartford 06106, phone (203) 566-3496.

"We are part of the hydrologic cycle of the earth," says Murphy, "just as we are a part of, and not separate from, all natural cycles. We must fill our niche in the world with gentleness."



This article was contributed by The Connecticut State Museum of Natural History at The University of Connecticut in Storrs, which exhibits mounted birds of Connecticut, the largest mounted white shark on display in the eastern United States, "Videoplace" interactive video, Indian artifacts, and offers programs for teachers, children, and adults. For information, contact the Museum, UConn Box U-23, Storrs, CT 06269-3023; phone (203) 486-4460. ■



DEP's Principal Environmental Analyst Jim Murphy at the red sink in the new exhibit, Connecticut's Ground Water: What Goes Down May Come Up. Red is the internationally recognized symbol for caution.

The Ferns of November

Text and Illustrations
by
Penni Sharp

AS THE DAYS DARKEN and the weather cools, the plants and animals of Connecticut prepare for winter. Those of us who are used to the changing seasons take the more visible signs of the process for granted. It seems natural and obvious that deciduous trees shed their leaves, that many birds with us for spring and summer leave for warmer climes, and that some native mammals, grown fat on the bounty of the fall harvest, get ready for a winter of sleep.

The mid-November landscape contrasts dramatically with that of late summer. What was lush and verdant is now brown and dry. Trees, except for the evergreens, are silhouettes.

On the forest floor, few plants remain green. Those that do are a welcome sight in an otherwise stark landscape. Among the evergreen species of non-woody plants are several of the ferns.

FERNS are non-flowering plants found almost the world over. Although most diverse and abundant in the tropics, ferns are well-represented in North America. In Connecticut, approximately 50 species are known to exist. With this relatively low number of species, learning to recognize ferns should be relatively easy. Some of the more common ferns are easily recognized; at the same time, the fern's propensity to hybridize can make identification a tricky proposition.

Late fall and winter might be a

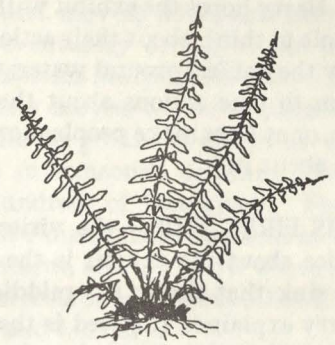
good time to start the study of some of our local ferns. Relatively few remain green throughout winter. There are also several ferns which die back, but have recognizable remains.

The basic structure of a fern consists of a rootstock or rhizome which supports the plant above and the roots below; the stalk or "stripe" which supports the leaf; and the leaf itself, which is also called a frond or blade. Many ferns have compound leaves, the divisions of which are known as leaflets.

A fern leaf unrolls in the spring from a coil referred to as a fiddlehead or crozier. This growth form is known as "circinate vernation," and is a distinguishing feature of true ferns. Another characteristic of ferns is the pattern of the veins in the leaves. On a typical fern leaf, the veins branch dichotomously, in two equal parts, whereas the veins on the leaves of flowering plants branch irregularly.

As noted, fern leaves can be simple or compound. A compound leaf that is divided once is called once-cut, or pinnate. Leaves divided two or three times are twice-cut, or bi-pinnate, and thrice-cut, or tri-pinnate, respectively. Leaf structure is important in species identification.

AN INTERESTING ASPECT of the ferns is their method of reproduction, or life cycle. Fern reproduction was poorly understood until recent times. It was once believed that ferns had invisible seeds, and that people carrying them were made invis-



Christmas Fern
(*Polystichum acrostichoides*)

ble. Indeed, Shakespeare makes reference to this belief in *King Henry IV*: "We have the receipt of fern-seed, we walk invisible."

True ferns reproduce by means of spores. Although there are variations, typically, small sori or fruit dots appear on the underside of a fern frond during midsummer. These fruit dots, which incidentally are diagnostic features for different species, are tiny clusters of spore cases; they contain the spores. In some ferns, the sori are covered by a thin protective membrane known as an "indusium." The case itself is sensitive to moisture, and on a dry day will burst, releasing ripe spores which are transported for long distances on the wind.

A single fern plant produces literally millions of spores in one growing season, yet comparatively few will land in suitable environs to grow to the next phase. When a spore does arrive at an appropriate location, it develops into a gametophyte. It begins as a single cell and divides rapidly until it forms a small heart-shaped body. The gametophyte contains both male and female organs. When conditions are right, fertilization occurs, and a new fern plant begins to grow on the gametophyte. The gametophyte provides nourishment in the early stages of development of the new plant.

IN THE WINTER WOODS, the most commonly noted fern is likely to be Christmas fern (*Polystichum acrostichoides*). Readily found along rocky slopes, wooded

stream banks, and ravines, this hardy fern stands out in winter, particularly after a light snowfall. Christmas fern grows in large clumps, its leaves arching from a central rootstock. It is once-cut, or pinnate, and its leaflets are distinguished by a triangular "ear" on the upper side. A leaflet held on end is said to resemble a Christmas stocking, the ear being the toe of the stocking. This, coupled with its evergreen habit, probably gave rise to the fern's common name.

The round fruit dots, or sori, are found on the underside of the leaflets any time between June and November. They form two or more rows and sometimes entirely cover the back of the leaflet. The numerous round brown fruit dots are diagnostic for Christmas fern.

A NOTHER FERN that remains green throughout the year is the marginal shield-fern or wood-fern (*Dryopteris marginalis*). This is a hardy species of fern that grows throughout Connecticut woodlands, from rocky drainageways to high upland environments. It has leathery, coarse fronds that are approximately 20 inches high and six inches wide. Leaves are bluish green above and lighter green beneath and are twice-cut, or bipinnate. The rootstock of the marginal shield-fern is quite noticeable, and from it arch six or more leaves.

The marginal-shield fern is so-named because of its large, prominent

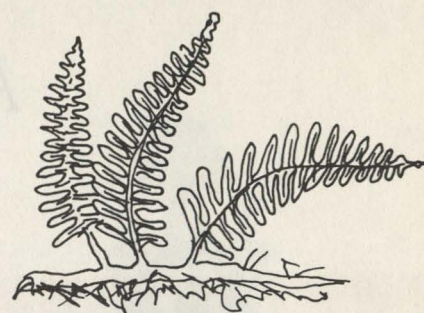


Sensitive Fern
(*Onoclea sensibilis*)

fruit dots which occur in rows at the margins of the leaflets. The indusium is kidney-shaped. In spring, the fiddleheads of this fern are covered with a golden-brown fuzz. They are not recommended for eating.

IN VERY ROCKY WOODS, one is almost certain to encounter a small evergreen fern, the common polypody (*Polypodium vulgare*). This compact little fern grows in the fissures of large boulders, on stumps, old logs, and on rocks along shaded watercourses. In preferred locations, the fern forms dense mats. Polypody fern leaves are bright green and shiny with a wax-like luster. This is a once-cut fern with the leaf cut almost to the axis into 10 to 20 pairs of leaflets. A leaf will grow to 12 inches in length. The rootstock has a horizontal growth pattern and will creep and spread along the surface of a rock. Rows of leaves grow from the rootstock. The large round fruit dots are reddish-brown when mature. They are usually found on the upper leaflets.

A FERN which does not remain as an evergreen, but can still be noted in winter time is sensitive fern (*Onoclea sensibilis*). The fertile frond of sensitive fern persists all winter. Another name for sensitive fern is bead fern, and this accurately describes the fertile fronds which resemble dark brown beads on a stalk. The sterile green leaf is the one that is most noted in summer. It is pale green and triangular-shaped, looking very fresh in the early summer and becoming quite ragged in appearance by summer's end. It is a once-cut fern, and the veins on the leaflets are net-like. They do not have the dichotomous pattern of most other ferns. The sterile leaves of the sensitive fern wither at the first frost, hence its common name. In Connecticut, sensitive fern grows in a variety of habitats, particularly where soils are moist. It is found in woods and open meadows, and thrives in both sun and shade. In spring, this fern is easily



Common Polypody
(*Polypodium vulgare*)

recognized by the masses of pale red fiddleheads that appear.

A NOTHER FERN that can be identified in winter by its fertile frond is the ostrich fern (*Matteucia struthiopteris*). The ostrich fern is one of Connecticut's largest ferns and grows in large arching clumps along rivers and streams. The sterile fronds die back at the first frost, but the fertile fronds which are lyre-shaped and resemble a large feather persist throughout winter. The fiddlehead of the ostrich fern appears in the spring. This is the edible fiddlehead often seen in local markets. Although the ostrich fern is usually located along watercourses or in swamps, it will also do well in the garden under partially sunny conditions. The delicious fiddleheads make it worth consideration as a cultivated plant.

L ATE FALL and early winter are delightful times to be outdoors. The air is crisp, the bugs are gone, and the deep cold of winter has yet to arrive. It is also a good time to learn to recognize certain of our native plants. There are far fewer now than in the height of the summer season, so the task of learning the ferns is a great deal easier. If now you can learn the ferns that remain evergreen and the ones that leave recognizable parts, then next spring you can learn other ferns which leave no remnants over the winter.

An Environmental Wish List

by

Alan Levere

Senior Environmental Analyst

NOT TOO LONG AGO, there was a reproduction of an early 1900s Sears and Roebuck catalog available. It was filled with just about everything, at affordable prices. It seems to me it was referred to as a "wish book."

In those days, when so much of our population lived in a truly rural America, getting into 'town' was a fairly infrequent event. That catalog must have been like having a department store at your fingertips. In my mind, it conjures up a winter scene of a long, unpaved driveway leading in from the road to an old farmhouse. In that farmhouse, there is someone on the floor in front of the fireplace, paging through the dog-eared catalog and figuring which item to select.

I don't think this article can offer that much romantic allure, but the following list of ideas might help you fill out someone else's wish list for the coming season, or maybe begin one of your own.

The Connecticut Walk Book is the latest addition to our sales offerings. The



Connecticut Forest and Park Association publishes this book which features 39 primary (and many spinoff) hikes around the state. Each is carefully described and includes a fold out trail map which depicts local roads, town and village locations, and major water bodies. 183 pages, \$12.00.

The Conservation Easement Handbook is a tool for improving land protection efforts. It provides land trust and public agency personnel with detailed guidance for a successful easement program and helps landowners to understand the technique. The many sections include: developing criteria, tax benefits, a step-by-step guide to the acquisition process, general questions, sample easement application, legal issues, and model easements, commentaries and more. This well illustrated resource is packed with information in an easy to follow format. 271 pages, \$19.95.

County maps in my eyes are among our best kept secrets. At a scale 1:50,000 the series of nine sheets forms

the base of information for bicyclists, walkers, hikers, and outdoor enthusiasts. And with good reason. The information offered is both helpful and diverse, as it reveals elevations and topography, urban and rural areas, the boundaries of counties, state parks and forests, and each municipality. There is a map for each of our eight counties, except Fairfield which has two maps. \$5.00 each.

Dinosaurs, Dunes, and Drifting Continents introduces the reader to the geologic story of the Connecticut River Valley. While the title reveals the emphasis of the book, subsections include old seas and sediments, sedimentary rocks (the ones the dinosaurs walked in), pre-historic Native Americans, land forms of the valley, and the Ice Age. The latter section includes the story of Glacial Lake Hitchcock, a lake that filled the valley for 150 miles behind a natural dam in Rocky Hill. 107 pages, many photos and drawings, \$6.50.





The Face of Connecticut is the story of the people, geology, and the land. Its descriptive text benefits the lay enthusiast and geologist alike. Dozens of color photographs take you through a Connecticut you have not seen before. The maps, line drawings, and woodcuts make this not only attractive, but wonderfully diverse in its content. A winner of the 1985 Notable Documents award of the American Library Association. Over 10,000 in print. 228 pages. \$12.95.

Field Guides to Wetlands is a set of books designed to help everyone understand more about the common wetland indicator plants of the northeastern United States. Packed with scores of pen-and-ink drawings, both books supply description, habitat, time of flowering, ranges and similar, or commonly confused, species. Freshwater wetlands is 246 pages. \$10.95. Coastal wetlands is 286 pages. \$12.95.

Guide to Lakes and Ponds. If I were a fisherman, this would be my bible. There are 72 lakes and ponds revealed here with the depths, fish types, access points, boat launches, facilities, parking and restrictions given for each. Ever-popular with sportsmen. Spiral bound for easy use. \$4.65.

Native Shrubs for Landscaping by the Connecticut College Arboretum discusses 52 shrubs that can be used to get the right landscaping touch you desire. The 33 color plates will help you

picture many of these shrubs at their best. Chapters on landscape design, planting and care, and where to obtain the shrubs round out this 40-page book. A must for every landscaper, amateur or professional. \$4.00.

Rural Landscape Design Manual actually has a complete name of *Dealing with Change in the Connecticut River Valley: A Design Manual for Conservation and Development*. The whole concept and layout of this book shows, through eight case models, how land development can occur without changing the character of the landscape. Each model is complete with three full-page color views of the parcel: one pre-development view, one with conventional development, and one after creative development. Also, two town profiles include planning information, a variety of subdivision requirements: noise, signage, parking, lighting, etc. 182 pages, color development plans, more than 50 photos, spiral bound. \$25.00.

The Shaded Relief Map not only gives boundary, road, and various water body information, but it has the appearance of being three-dimensional. The shading contrasts of dark and light give an impression of shadows which result in the appearance of relief. Thus, the eastern and western highlands seem elevated, while the Connecticut River Valley and the coastal plain seem flat in com-



parison. It has always been popular, and it remains an eye catcher. About 55" by 44", 1:125,000 scale. \$5.00.

The State Base Map is the best all-purpose planning and reference map we have. At a scale of 1:125,000, it has well delineated town, county, and state forest and park boundaries; scores of named water bodies, rivers and streams in blue, urban areas in yellow, state forests and parks in green, and major road networks in red. The topographic lines are brown with an interval of 50 feet. This colorful 44" by 55" map remains a useful tool for sales territories, general reference, and overall geography of the state. One of the most popular maps we have available. \$5.00.

Certainly we don't have 600 pages of things to offer, and we may not have snow by the end of the year. But the information described here will help you share an understanding of our past, learn about the state we live in today, and tackle some of the problems that exist as we approach a new decade.

Still, though, I have to believe that someone, somewhere, will be reading through this article in front of a fireplace.

If you order, please include state sales tax of eight percent and \$2.00 for handling per order (not per item). Our address is: DEP-NRC, Map Sales, Room 555, 165 Capitol Avenue, Hartford, CT 06106.

Congratulations to DEP Retirees

On October 1, 1989, a total of 31 DEP employees retired from public service. To all of them, we express gratitude, congratulations, and best wishes for an enjoyable and well-earned retirement.

Robert Aborn, Law Enforcement, 32 years

Carl Bigham, Western District Headquarters, 11 years

William Brewster, Eastern District Headquarters, 21 years

Lawrence Callahan, Western District Headquarters, 23 years

Mary Corcoran, Planning and Development, 19 years

Mary DeMaio, Administration, 20 years

Paul Dion, Local Assistance, 20 years

Edward Gill, Western District Headquarters, 32 years

George Hayden, Law Enforcement, 27 years

August Herlth, Eastern District Headquarters, 37 years

Stephen Hitchcock, Hazardous Waste, 31 years

Warren Hull, Western District Headquarters, 23 years

Donald Karn, Radiation Compliance, 19 years

Charles Kurker, Solid Waste, 30 years

Josephine Lantieri, Division Services, 43 years

Matthew Lennon, Radiation Compliance, 26 years

Stephen Lozyniak, Western District Headquarters, 42 years

Arthur Manseau, Eastern District Headquarters, 23 years

Mary Marek, Land Acquisition, 22 years

Edward Milke, Western District Headquarters, 39 years

Robert Muldoon, Law Enforcement, 20 years

Kenneth Parkes, Law Enforcement, 20 years

Joseph Pikul, Law Enforcement, 20 years

Frank Scranton, Eastern District Headquarters, 27 years

Elizabeth Seymour, Administration, 39 years

John Spellacy, Division Services, 38 years

Michael Stanowich, Eastern District Headquarters, 21 years

Myron Van Hess, Jr., Law Enforcement, 27 years

Walter Walenski, Air Compliance, 19 years

Walter Welsh, Eastern District Headquarters, 20 years

Lloyd Whitman, Conservation and Preservation, 35 years. ■

Tree Seedlings

State Forester Peter M. Babcock has announced that orders for tree and shrub seedlings are now being accepted for the 1990 spring planting season. Connecticut landowners may purchase the seedlings for Christmas tree plantings; for reforestation; or for wildlife, soil stabilization, or other conservation purposes. Those wishing to purchase seedlings are urged to place their orders as soon as possible because some species sell out very quickly. All seedlings will be shipped in late March or early April to one of nine pick up points, located throughout the state. Landowners will be notified by postcard when the order may be picked up.

Seedlings may be ordered through either of two programs: the "Wildlife Habitat Package" or "Forest Planting Stock."

The "Wildlife Habitat Package" consists of 50 tree seedlings (25 hemlock and 25 Norway spruce) and 50 shrub seedlings (25 silky dogwood and 25 autumn olive). At least one quarter acre of plantable land is needed to qualify for the 100 seedlings provided under this program.

"Autumn olive and silky dog-

wood provide food for a wide variety of bird species," Babcock said, "while the hemlock and spruce trees supply evergreen cover and protection, particularly in the winter. Together the trees and shrubs produce a mini wildlife habitat in about five years. Landowners should be aware that autumn olive spreads rapidly if not controlled by mowing or cultivation."

The price of the "Wildlife Habitat Package" is \$24.00 including delivery to a specified pick-up point.

"Forest Planting Stock" is available to Connecticut landowners with larger planting areas, who intend to establish a forest plantation, develop a commercial Christmas tree planting, augment existing forest stands, stabilize eroded areas, or who have other specific conservation needs. Forest planting stock orders for conifer species must be in multiples of 250. Prices are based on \$88.00 per thousand seedlings. A typical Christmas tree plantation has about 1,400 trees per acre. "Forest Planting Stock" orders require the approval of a service forester, who may come to inspect the planting area.

Two restrictions are placed on all orders: They cannot be resold with roots attached or be used for ornamental planting.

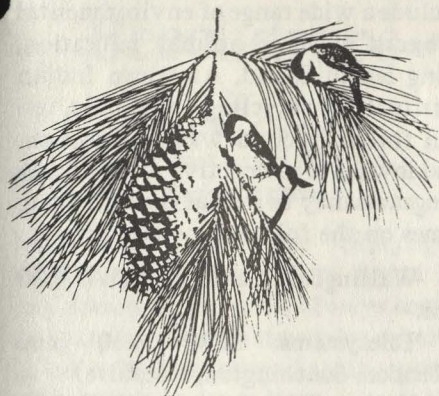
"Seedlings are quite small when received," Babcock said, (from six to 12 inches tall). "They grow slowly for the first year or two. Then, more rapid growth and development can be expected."

To obtain an order form, call or write one of the following: State Forester's Office, 165 Capitol Ave., Hartford 06106, telephone: 566-5348

Western District Headquarters, 230 Plymouth Road, Harwinton 06791, telephone: 485-0226

Eastern District Headquarters, 209 Hebron Road, Marlborough 06447, telephone: 295-9523

Pachaug State Forest Nursery, RFD#1, Box 23A, Voluntown 06384, telephone: 376-2513 ■



LIS Atlas Available

The DEP's Natural Resources Center is pleased to announce the reprinting of the *Long Island Sound Atlas of Natural Resources*. This colorful 52-page text is an excellent primer on shoreline features, vegetation, mollusks, fishes, birds, mammals, benthos (organisms which live on the sea floor), and glacial geology. If you have an interest in Long Island Sound, this 14-chapter *Atlas* should be a part of your refer-

ence library. Included are 22 illustrations and 25 figures and maps to round out the text. The *Atlas* sells for \$5.00 per copy.

To order, please include state sales tax of eight percent and \$2.00 for handling per order — not per item. Our address is: DEP-NRC, Map Sales, Room 555, 165 Capitol Avenue, Hartford, CT 06106. ■

Upcoming DEP Events

November 18: Higby Mountain Hike, DEP Family Outdoor Discovery Program, Higby Mountain, Middlefield. 10 a.m. Join DEP's Alberto Mimo on a hike of this traprock ridge which is a critical habitat for several endangered plants and animals. No registration necessary. This fairly long hike is not recommended for children under 10. Bring lunch and water. Camera and comfortable hiking footwear also recommended. Cancelled in case of rain. Meet at rear of Guida's

Restaurant, Routes 66 and 147 in Meriden.

November 25 to December 17: Victorian Christmas at Gillette Castle State Park, East Haddam. Saturdays and Sundays only, 10 a.m.-4 p.m. Gillette Castle will celebrate the season with Victorian Christmas decorations and musical programs suitable to the season. Admission is \$1 for adults; 50 cents for children 6-11; under 6, free. Castle is 4 miles south of East Haddam off Route 82. Information: 526-2336.

December 9 to December 17: Holiday open house at Osborne Homestead, Derby. 10 a.m.-3:30 p.m. (Plus some evenings; call Kellogg Environmental Center, 734-2513, for evening dates and to arrange for group tours.) The Osborne Homestead Museum, an impressive Federal structure which houses a significant collection of antiques and fine art, will be decked with turn-of-the-century style floral arrangements and holiday decorations. Museum is one mile northwest of Der-



Two DEP conservation officers were honored by the Shikar-Safari Club International on September 21, 1989. DEP Law Enforcement Division Conservation Officers Patrick Hayes and Myron Van Ness were honored by Shikar-Safari International as wildlife officers of the year for 1987 and 1988, respectively. The officers were presented with plaques and scrolls for their outstanding contributions to wildlife enforcement in Connecticut. Right to left: Dennis DeCarli, DEP deputy commissioner; Patrick Hayes; James Martin, Shikar-Safari representative; Myron Van Ness; and Robert Buyak, director, DEP Law Enforcement Division.

by off Route 34, at 500 Hawthorne Avenue. A donation of \$1 is requested. Information: 734-2513.

December 10: Sled Dog Race, Pachaug State Forest, Voluntown. 10:30 a.m.-4:30 p.m. Sponsored by Connecticut Valley Siberian Husky Club. Weather and trail conditions permitting. Spectators free. Information: 739-9788, 238-2532. ■

Poster Available

Here's an opportunity to learn more about the beauty and variety of Connecticut's wildlife while helping to conserve and manage their populations. The DEP's Wildlife Bureau is offering *Winter Picnics Are For The Birds* — a 23" by 28" full-color poster, along with a free 40-page backyard wildlife guide, and a Connecticut wildlife checklist — all for just \$5.00.

Winter Picnics Are For The Birds is the first in a series of "Discover Connecticut's Wildlife" poster and field guide sets designed to teach Connecticut citizens more about the wildlife around us. This delight-

fully detailed reproduction of an original watercolor by Connecticut artist Chris Rowlands depicts a winter backyard bird feeder scene. The accompanying 40-page guide describes each species in the poster, provides feeding tips, species habitat requirements and information on how you can make your backyard a wildlife paradise. The wildlife checklist is a handy pocket guide that lists all of the wildlife species found in Connecticut.

All proceeds from the sale of these poster and field guide sets will be used to support the Wildlife Bureau's non-harvested wildlife program. Songbirds, reptiles and amphibians, endangered and threatened species, and other nongame wildlife will thank you for it. ■

Environment on TV

The new television series, *Environment*, produced by Sandra Sprague of WPL-TV in Wallingford, and hosted by Bob Paier, editor of *Connecticut Environment* magazine, may be seen this month on public access channels in even more areas of Connecticut. Topics

include a wide range of environmental subjects, such as animal relocation, Long Island Sound, American Indian spirituality, recycling, wetlands, urban forests, ground water protection, and low level radioactive waste. These programs may be seen at the following times on the following stations:

Wallingford Cable 33: MWF 8:00 p.m.

Telesystems: MWF 8:00 p.m. (Meriden, Southington, Cheshire)

Valley Cable Vision: MWF 8:00 p.m. (Ansonia, Derby, Shelton, Oxford, Beacon Falls, Seymour, Bethany, Naugatuck)

Storer Communications of Clinton: Tues. 5:00 p.m., Fri. 8:00 p.m. (Old Saybrook, Westbrook, Clinton, Killingworth, Deep River, Essex, Chester, Durham, Haddam)

United Cable of Eastern Connecticut: Sundays, 8:00 p.m. (Vernon, Ellington, Tolland, Bolton, Andover, Hebron, Marlborough)

Heritage Cablevision: MWF 8:00 p.m. (Wallingford, North Branford, North Haven, Branford, Guilford, Madison, East Haven)

Please check individual stations for details. ■

DISCOVER CONNECTICUT'S WILDLIFE!

YES I Would Like to
DISCOVER CONNECTICUT'S WILDLIFE!

Check One

☐ Please send me "Winter Picnics Are For The Birds" poster, backyard wildlife guide, and checklist.

☐ Please send "Winter Picnics Are For The Birds" poster, backyard wildlife guide, and checklist as a gift in my name.

My Name: _____

Telephone: () —

I have enclosed a \$5 check or money order payable to the Connecticut D.E.P. Nonharvested Wildlife Fund.

"WINTER PICNICS ARE FOR THE BIRDS"... Poster, Backyard Wildlife Guide, and Checklist

Send My Order To: (PLEASE PRINT)

Name _____

Address _____

City _____

State _____ Zip _____

Send your order form, along with \$5 check or money order to:



DISCOVER CONNECTICUT'S WILDLIFE
P.O. Box 1238
Burlington, CT 06013

Make Checks payable to: CONNECTICUT D.E.P. NONHARVESTED WILDLIFE FUND

Trailside Botanizer

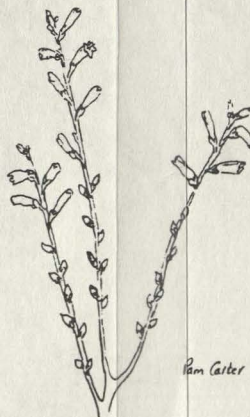
Beechdrops

by
Gale W. Carter
Illustration by
Pam Carter

Discovering beechdrops (*Epifagus virginiana*), which can be found at any season of the year, always comes as a surprise because it usually appears to be a lifeless twig. Lacking green chlorophyll, it depends on a host, the roots of beech trees, for its nourishment. This member of the broom-rape family, along with other members of the same family, is often called cancer root.

The stem of beechdrops has a branched growth habit and may vary in color from reddish to yellowish to brownish. It may reach a height of 18 inches, but is usually shorter. Alternating scales, which are modifications of leaves, cover the stem. The root is brittle and fibrous.

Only during the months of September and October, and occasionally in November, does it manifest any signs of life. At this time, its two kinds of flowers emerge. The upper larger flowers are tubular and colorful with a nearly closed purple and white striped corolla. Each flower is approximately one half inch in length. The stamens and the style are both long.



© copyright 1989, Gale W. Carter.

The upper flowers are usually sterile, despite the presence of all the necessary parts for reproduction. The lower fertile flowers are closed and lack color. Both the stamens and style are short. These flowers are self-pollinated.

The fruit is a tiny capsule with many seeds. There is a short corolla which remains closed and may stay attached to the tip of the growing capsule for some time before becoming detached.

The name *Epifagus* comes from two Greek words, *epi* meaning "upon" and *fagus* meaning "beech." Its species name, *virginiana*, refers to the state where the plant was first described. Beechdrops usually grows within 15 feet of a beech tree, often forming small colonies.

Because the plant has astringent properties, it has been used for the treatment of external injuries such as wounds, cuts, bruises, and other skin irritations. ■

The Night Sky

When the Sun Goes Out

by
Francine Jackson

When teaching school children astronomy, I often remind them that the sun's life will eventually come to an end -- but not to worry, because the old star still has about 10 billion years of life left to it. Invariably, someone in the room will become worried. "But, what will happen to *us*? How will we survive?"

It's really amazing how, to a child, a 10-billion-year span will actually impact on his existence. Yet, to an astronomer, the distance equal to that time can be seen with a telescope to show much of our present universe in its early stage. Ten billion years ago, our universe was a child, growing rapidly with stars and galaxies, forming the beauty which we now can see

every clear night.

About five billion years ago, a very important star was added to the collection of those already present in the Milky Way Galaxy. At present, it is the only star we know to be supporting life -- our life, in fact. That star is our sun.

In our neighborhood, the sun is the only star. A star, by the way, is a glowing glob of gas. It creates its own light and heat. Everything else around is warm because it picks up the sun's heat, and is seen because it reflects the sun's light. In size, the sun is about 864,000 miles in diameter, about the width of 100 earths strung side by side. Hollowed out, it could accommodate over 1,000,000 earths.

During November, the sun as we see it moves farther and farther southward. Because of this, it shines for less and less time as the month progresses, eventually reaching its southernmost point in mid-December. The lack of visible sun -- and consequently the

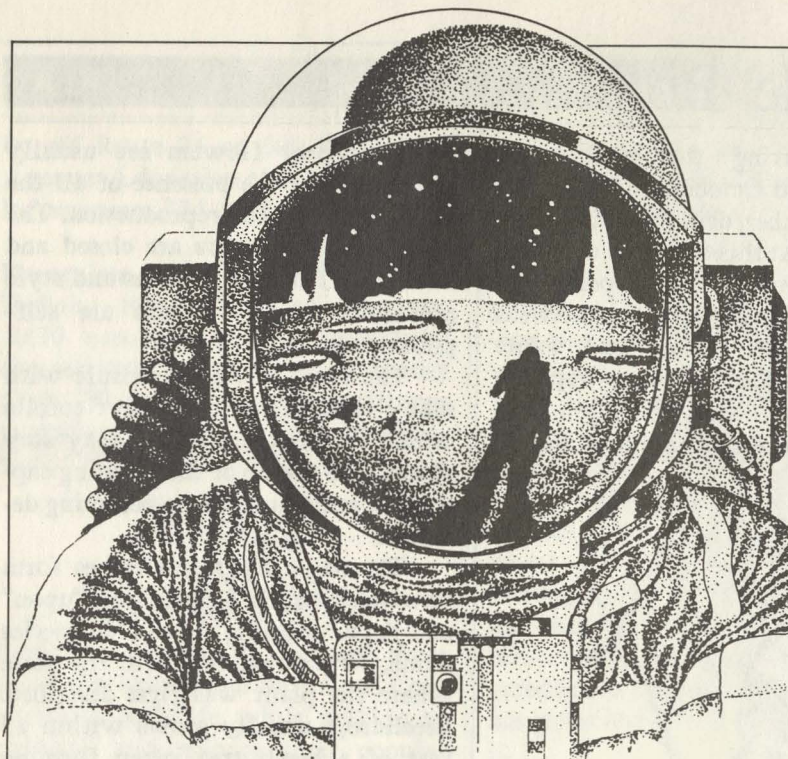
longer nights -- creates cooling on the northern half of the earth, resulting in our wearing more and heavier layers of clothing almost from day to day during this time of year.

The sun, almost since its creation, has been going out, though it sometimes appears to us that the sun will never shine as brightly and as warmly as it had just a few months ago. Just be patient: it will come back. What a comforting thought -- especially when we remember that it will continue to shine for us for at least 10 billion long years more. ■

Endnote

A monk once asked Master Joshu, "Has a dog the Buddha nature or not?" Joshu said, "Mu!"

Zen koan.



Connecticut Environment
will get you there first.

Please send a *Connecticut Environment* subscription to:

Name: _____
(Please Print)

Address: _____

Town: _____

State: _____ Zip: _____

___ \$7/1 year ___ \$13/2 yrs

Name: _____
(Please Print)

Address: _____

Town: _____

State: _____ Zip: _____

___ \$7/1 year ___ \$13/2 yrs

DEP *Connecticut Environment*
165 Capitol Ave., Rm. 112
Hartford, CT 06106

Gift card to read from: _____

CONNECTICUT
ENVIRONMENT

Department of Environmental Protection
State Office Building, Rm. 112
Hartford, CT 06106

SECOND CLASS POSTAGE PAID
AT HARTFORD, CONNECTICUT